

WHAT IS CLAIMED IS:

1. An ink composition comprising at least a coloring agent and a medium, wherein the ink composition has a dynamic surface tension, measured by a maximum bubble pressure method at a temperature of 24 to 26 °C, and a static surface tension measured at a temperature of 24 to 26 °C which satisfy the following relation (1):

$$0 \leq [\text{dynamic surface tension (mN/m)}] - [\text{static surface tension (mN/m)}] \leq 7 \text{ (mN/m)} \quad (1)$$

2. The ink composition of claim 1, wherein a bubble frequency, at which the dynamic surface tension is measured, is within a range from 0.5 to 35 Hz.

3. The ink composition of claim 1, wherein the static surface tension is within a range of from 20 to 50 mN/m.

4. The ink composition of claim 1, further comprising water as a medium.

5. The ink composition of claim 1, further comprising a surfactant.

6. The ink composition of claim 1, wherein the medium

includes a glycol ether and/or a polyhydric alcohol.

7. The ink composition of claim 1, wherein the coloring agent includes a dye.

8. The ink composition of claim 1, wherein the coloring agent includes a pigment.

9. The ink composition of claim 1, wherein the coloring agent includes a pigment having a hydrophilic group.

10. The ink composition of claim 5, wherein the surfactant includes a nonionic surfactant.

11. The ink composition of claim 5, wherein the surfactant is contained at least by a critical micelle concentration.

12. The ink composition of claim 8, wherein the pigment includes at least either C. I. Pigment blue 15:3 or C. I. Pigment blue 15:4.

13. The ink composition of claim 8, wherein the pigment

includes at least one selected from the group consisting of C. I. Pigment red 122, C. I. Pigment red 209 and C. I. Pigment violet 19.

14. The ink composition of claim 8, wherein the pigment includes at least one selected from the group consisting of C. I. Pigment yellow 74, C. I. Pigment yellow 138, C. I. Pigment yellow 150 and C. I. Pigment yellow 180.

15. A recording method for recording an image, comprising:

depositing an ink composition on a recording material,

wherein the ink composition is the ink composition of claim 1.

16. A recording method for recording an image comprising:

pressurizing an ink composition to discharge a liquid droplet of the ink composition; and

depositing the liquid droplet on a recording material,

wherein the ink composition is the ink composition of claim 1.

17. The recording method of claim 15, wherein for the ink composition are used at least the ink composition of claim 12; the ink composition of claim 13; and the ink composition of claim 14.

18. The recording method of claim 16, wherein for the ink composition are used at least the ink composition of claim 12; the ink composition of claim 13; and the ink composition of claim 14.

19. A recorded image recorded by the recording method of claim 15.

20. A recorded image recorded by the recording method of claim 16.

21. An ink set comprising:
the ink composition of claim 12;
the ink composition of claim 13; and
the ink composition of claim 14.

22. An ink head comprising:
an ink tank for storing the ink composition of

claim 1;

an ink chamber having a discharge port for discharging a liquid droplet of the ink composition and receiving a supply of the ink composition from the ink tank;

a piezoelectric element generating a strain in response to an applied voltage and provided at least in a part of the ink chamber thereby applying a pressure to the ink composition contained in the ink chamber; and

an electrode for applying a voltage to the piezoelectric element.

23. An ink head comprising:

an ink tank for storing the ink composition of claim 1;

an ink chamber having a discharge port for discharging a liquid droplet of the ink composition and receiving a supply of the ink composition from the ink tank;

a heat generating member provided in at least a part of the ink chamber, for heating the ink composition contained in the ink chamber to generate a bubble therein and thereby applying a pressure to the ink composition; and

an electrode for applying a voltage to the heat generating member.

24. A recorded image recorded by depositing a liquid droplet of an ink composition, discharged by the ink head of claim 22, onto a recording material.

25. A recorded image recorded by depositing a liquid droplet of an ink composition, discharged by the ink head of claim 23, onto a recording material.

26. An ink composition comprising at least a coloring agent and a medium,

wherein among dynamic surface tensions measured by a maximum bubble pressure method at a temperature of 24 to 26 °C, a dynamic surface tension (σ_{10}) at a bubble frequency of 10 Hz and a dynamic surface tension (σ_1) at a bubble frequency of 1 Hz have a difference d ($= \sigma_{10} - \sigma_1$) satisfying the following relation (2):

$$0 \text{ mN/m} \leq d \leq 7 \text{ mN/m} \quad (2).$$

27. The ink composition of claim 26, wherein the dynamic surface tension (σ_{10}) at the bubble frequency of 10 Hz and the dynamic surface tension (σ_1) at the bubble

frequency of 1 Hz are within a range from 20 to 70 mN/m.

28. The ink composition of claim 26, further comprising a surfactant.

29. The ink composition of claim 26, wherein the medium contains water.

30. The ink composition of claim 26, wherein the medium contains at least either a glycol ether or a polyhydric alcohol.

31. The ink composition of claim 26, wherein the coloring agent includes a dye.

32. The ink composition of claim 26, wherein the coloring agent includes a pigment.

33. The ink composition of claim 29, wherein the coloring agent includes a pigment having a hydrophilic group.

34. The ink composition of claim 28, wherein the surfactant includes a nonionic surfactant.

35. The ink composition of claim 28, wherein the surfactant is contained at a critical micelle concentration or higher.

36. The ink composition of claim 32, wherein the pigment includes at least either C. I. Pigment blue 15:3 or C. I. Pigment blue 15:4.

37. The ink composition of claim 32, wherein the pigment includes at least one selected from the group consisting of C. I. Pigment red 122, C. I. Pigment red 209 and C. I. Pigment violet 19.

38. The ink composition of claim 32, wherein the pigment includes at least one selected from the group consisting of C. I. Pigment yellow 74, C. I. Pigment yellow 138, C. I. Pigment yellow 150 and C. I. Pigment yellow 180.

39. The ink composition of claim 32, wherein the pigment includes carbon black.

40. A recording method for recording an image

comprising:

depositing an ink composition on a recording material,

wherein the ink composition is the ink composition of claim 26.

41. A recording method for recording an image comprising:

pressurizing an ink composition to discharge a liquid droplet of the ink composition; and

depositing the liquid droplet on a recording material,

wherein the ink composition is the ink composition of claim 26.

42. The recording method of claim 40, wherein for the ink composition are used at least the ink composition of claim 36; the ink composition of claim 37; and the ink composition of claim 38.

43. The recording method of claim 41, wherein for the ink composition are used at least the ink composition of claim 36; the ink composition of claim 37; and the ink composition of claim 38.

44. The recording method of claim 40, wherein for the ink composition are used at least the ink composition of claim 36; the ink composition of claim 37; the ink composition of claim 38; and the ink composition of claim 39.

45. The recording method of claim 41, wherein for the ink composition are used at least the ink composition of claim 36; the ink composition of claim 37; the ink composition of claim 38; and the ink composition of claim 39.

46. A recorded image recorded by the recording method of claim 40.

47. A recorded image recorded by the recording method of claim 41.

48. An ink set comprising:
the ink composition of claim 36;
the ink composition of claim 37; and
the ink composition of claim 38.

49. An ink set comprising:

the ink composition of claim 36;

the ink composition of claim 37;

the ink composition of claim 38; and

the ink composition of claim 39.

50. An ink head comprising:

an ink tank for storing the ink composition of claim 26;

an ink chamber having a discharge port for discharging a liquid droplet of the ink composition and receiving a supply of the ink composition from the ink tank;

a piezoelectric element generating a strain in response to an applied voltage and provided at least in a part of the ink chamber, for applying a pressure to the ink composition contained in the ink chamber; and

an electrode for applying a voltage to the piezoelectric element.

51. An ink head comprising:

an ink tank for storing the ink composition of claim 26;

an ink chamber having a discharge port for

discharging a liquid droplet of the ink composition and receiving a supply of the ink composition from the ink tank;

a heat generating member provided in at least a part of the ink chamber, for heating the ink composition contained in the ink chamber to generate a bubble therein and thereby applying a pressure to the ink composition; and

an electrode for applying a voltage to the heat generating member.

52. A recorded image recorded by depositing a liquid droplet of an ink composition, discharged by the ink head of claim 50, onto a recording material.

53. A recorded image recorded by depositing a liquid droplet of an ink composition, discharged by the ink head of claim 51, onto a recording material.